Curriculum Vitae

Personal Data

Name	:	Dmitry O. Litvintsev
Address	:	Fermilab, P.O. Box 500, M.S. 318, Batavia, IL, 60510
tel.	:	(630) 840 5005
fax	:	(630) 840 2968
e-mail	:	litvinse@fnal.gov

Profile

- Strong interest in studies of properties of heavy flavor hadrons. Demonstrated an excellent ability to perform complex and innovative analyses of the experimental data collected by modern particle detectors with results published in internationally circulated high energy physics journals and conference proceeding.
- Excellent communication skills developed over the years of work in large international collaborations (ARGUS, CMS and CDF), ability to build rapport easily with peer scientists.
- Expertise in formulation of physics requirements for particle detectors based on simulations of studied phenomena. Experience with design, development, implementation, running and tuning of simulation tools of complex particle detectors and physics processes.
- Expertise in design, assembly and test beam setups of calorimeter prototypes. Experience with data acquisition, data taking and processing.
- Ability to design and implement large scale software projects using appropriately applied powerful object-oriented design patterns. Examples: Event Display for CDF Run II, Data File Catalog for CDF Data Handling System.
- Expertise in developing and running large scale ($\sim$ 1 PB) data storage and delivery systems (CDF Run II Data Handling System).

Education

1998 Ph.D. in Physics. Thesis "Observation of an Excited Charmed Baryon $\Lambda_c(2625)$" (ARGUS Collab., DESY(Germany)). Thesis adviser Prof. Michael V. Danilov. State Scientific Center of Russian Federation Institute of Theoretical and Experimental Physics (ITEP), State Committee of Atomic Energy, Moscow, Russia.

1992 Master Degree in Physics at Elementary Particle Physics Division of Department of General and Applied Physics, Moscow Institute of Physics and Technology (MIPT), Russia.

1989 B.S. in Physics and Mathematics, Department of General and Applied Physics, MIPT.

Employment

- 2000–present, Research Associate at Fermi National Accelerator Laboratory (FNAL).
- 1999-2000, Senior Research Scientist, ITEP.
- 1994-1999, Research Scientist, ITEP.
- 1992-1994, Junior Research Scientist, ITEP, Moscow, Russia.

Visitor Positions

- 1999-2000: Visiting Scientist (full time) at CDF Collaboration, FNAL, (P.O. Box 500, Batavia, IL, 60510).
- 1994-1999: Visiting Scientist at European Laboratory for Particle Physics (CERN), Geneva, Switzerland.
- 1992-1993: Visiting Scientist at Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany.

Major Collaborations

- 1998-present: Collider Detector at Fermilab CDF Collaboration, FNAL, USA.
- 1994-1999: Compact Muon Solenoid (CMS) Collaboration, CERN, Switzerland
- 1994-1995: RD40 project, CERN, Switzerland
- 1992-1997: ARGUS Collaboration, DESY, Germany

Leadership Positions

- 2005 Co-convener of CDF Production Spectroscopy and Properties group.
- 2004 Co-convener of CDF Pentaquark task force. Leader of pentaquark analysis effort at CDF
- 2003-2004 Head of the CDF Data Base Group. Leading a group of CDF physicists and FNAL computing professionals to develop and operate the CDF data bases on a 24/7 basis.
- 2002-2003: Deputy Head of the CDF Data Base Group.
- 2002: Co-leader of B-validation group.

Experience

CDF data analysis

- 2004 Proposed a vigorous program of exotic baryon searches at CDF. Have developed particle identification algorithm based on combined likelihood ratio from measurements of specific ionization and time-of-flight for allowed mass hypotheses. Results of pentaquark searches at CDF presented at international physics conferences (DPF'04, BEACH'04, ICHEP'04).

- 2004 performed search for an exotic baryon state containing charmed quark, Θ_c, decaying to $D^{*-}p$. Paper is in preparation.

- Study production of heavy flavor baryons containing $s-$quark.

- 2004 Measurement of $\frac{\sigma(p\bar{p}\to\Lambda_b X)\cdot BR(\Lambda_b\to\Lambda_c\pi)}{\sigma(p\bar{p}\to B^0 X)\cdot BR(B^0\to D^-\pi^+)}$. Approved for publication. First draft circulated.

- 2003-2004 Performed a search for an exotic S=-2 baryon states consisting of five quarks (pentaquarks) decaying to $\Xi\pi^{\pm}$. Set an upper limit on relative production rate of exotic states with respect to production of $\Xi(1530)$ in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV. Approved for publication. Paper is in preparation.

- 2002-2003: Developed dedicated tracking of long lived hyperons Ξ and Ω in the volume of silicon tracker of the CDF detector.

- 2002: Made crucial contribution to measurement of J/ψ production cross section at $p\bar{p}$ collisions at center of mass energy of 1.96 TeV down to $p_T(J/\psi) = 0$ GeV/c. e-Print Archive: hep-ex/0412071. Submitted to Phys.Rev.D.

CDF projects

- 2003-present: Design and development of scalable multi-tiered DB access architecture.

- 2000-2002:

  - Design, implementation, commissioning and maintenance of CDF Data File Catalog.
  - Took active part in upgrade of CDF Data Handling system to meet the requirements of Run II experiment.
  - Run CDF raw data logging.
  - Setup secondary and tertiary datasets tape logging.
  - Setup tape logging of mass off-site Monte Carlo production.

- 1998-2000: designed, implemented and maintained CDF Run II Event Display.

CMS projects

- 1994-1999: Developed simulation and reconstruction package for Very Forward Quartz Fiber Calorimeter (VFCAL), a.k.a. Hadron Forward (HF), of the CMS detector at the future Large Hadron Collider (LHC), CERN, Switzerland.

  The leader of the HF simulation effort.

- 1994-1995: Participated in RD40 Project, CERN, Switzerland. Research and Development of calorimeters based on detection of Cherenkov light radiated by shower particles traversing quartz optical fibers embedded in absorber.

- 1993-1994: Author of original code for Cherenkov light emission and propagation in optical fibers. Incorporated this code into GEANT based program for the simulation of response of the novel quartz fiber calorimeter.

ARGUS data analysis

- 1992-1993: Studied charmed baryon production in e^+e^- annihilation.

  Discovered the first excited charmed baryon state - $\Lambda_c(2625)$.

  Measured $BR(\Lambda_c \to \Lambda\ell\nu\mathrm{X})$.

Teaching experience

- Being senior student at MIPT worked as teacher of physics and mathematics at Evening School of Physics and Technology. The goal of this school was to prepare high school and college graduates for very difficult MIPT entrance exams.

- During my employment at ITEP I supervised student working on Master Thesis based on search for lepton flavor violating τ-lepton decays.

- At CDF, I advise two post graduate students. One of them works on maintenance and support of CDF Run II Event Display. Another one studies diffractive production of hyperons in $p\bar{p}$-collisions.

Conference Talks

1. "Status of Pentaquark Searches", Joint Theoretical and Experimental Physics Seminar, Fermilab, February 25, 2005.

2. "Pentaquark Searches at CDF", 6th International Conference on Hyperons, Charm and Beauty Hadrons, BEACH 2004, June 27 - July 3, 2004, IIT, Chicago, U.S.A. Proceedings to appear in Nuclear Physics B (Proceedings Supplements) (also FERMILAB-CONF-05-205-E)

3. "Heavy Flavor Physics at CDF", Invited talk at international Aspen 2004 Winter Conference on Particle Physics, February 1-7, 2004 Aspen, CO, USA

4. "CDF Run II Data Handling System", International Conference for Computing in High Energy and Nuclear Physics (CHEP'2003), March 23-28 2003, La Jolla, CA, USA, Published in eConf C0303241:THKT005,2003, a-print archive: physics/0306060.

5. "The CDF Run II Data File Catalog", Poster session at International Conference for Computing in High Energy and Nuclear Physics (CHEP'2001), September 3-7, 2001, Beijing, China. Edited by H.S. Chen, Beijing, 3-7 Sept 2001, Science Press, Beijing/New York.

6. "A CDF Event Display", International ROOT 2001 Workshop, Fermilab, USA, Jun 2001

7. "Recent ARGUS Results on Charmed Hadron Production", Biennial International Conference on Nucleon-Antinucleon Interactions. Published in Phys.Atom.Nucl.57:1542-1546,1994

8. "Recent Results in Heavy Hadron Spectroscopy", IVth International Workshop on Progress in Heavy Quark Physics, Rostock, Germany, September 20-22, 1997 Published in Rostock 1997, Progress in heavy quark physics, 226-236

9. Annual Conferences of Russian Academy of Science,1993,1994.

Colloquia, seminars, invited lectures and major meeting talks

1. "Status of Pentaquark Searches" 03/07/05 University of Illinois at Urbana-Champaign. High Energy Theoretical/Experimental Physics Seminars.

2. "Status of Pentaquark Searches" 02/25/05 Fermi National Accelerator Laboratory. Joint Theoretical and Experimental Physics Seminar.

3. "Pentaquark Searches at CDF",
   09/13/04 Massachusetts Institute of Technology, Nuclear and Particle Physics Colloquia,
   `http://www.lns.mit.edu/seminars/nppc.html`

4. "Search for S=-2 Pentaquarks at CDF"
   04/09/04 Fermilab, Chicago Flavor Seminar
   `http://theory.fnal.gov/people/nierste/cf/Chicago_Flavor.html`

5. "Cascade Reconstruction and Physics at CDF", CDF Collaboration Meeting, January, 2004

6. "Data Handling at CDF" 10/08/02 Fermilab, Food-for-Thought seminar for Research Associates.

7. "CDF Data Handling System", CDF Collaboration Meeting, May, 2001

8. ARGUS Collaboration Meetings 1992, 1993, 1996.

Technical Notes

- "Measurement of $BR(\Lambda_b \rightarrow \Lambda_c\pi)/BR(\bar{B}^0 \rightarrow D^+\pi) \times \sigma(\Lambda_b)/\sigma(\bar{B}^0)$" – PRL 1st Draft CDF/PUB/BOTTOM/PUBLIC/7427
- CDF/PUB/BOTTOM/PUBLIC/7219 "Pentaquark Searches at CDF"
- CDF/PUB/BOTTOM/PUBLIC/7146 "Search for Pentaquark states decaying to $D^{-,0,*-}$ proton"
- CDF/PUB/COMP_UPG/PUBLIC/7054 "The CDF Run II Event Display"
- CDF/PHYS/BOTTOM/PUBLIC/6978 "Search for the $\Theta_c^{(}$3099) State Reported by the H1 Experiment"
- CDF/ANAL/BOTTOM/CDFR/6855 "A Search for Exotic S=-2 Baryons Decaying to $\Xi\pi$"
- CDF/PUB/TRACKING/PUBLIC/6527 "Tracking of Hyperons in SVX detector"
- CDF/DOC/BOTTOM/CDFR/6144 "Measurement of relative L3/Offline tracking efficiency"
- CDF/PHYS/BOTTOM/CDFR/6015 "Run II JPsi Cross Section"
- CDF/DOC/BOTTOM/CDFR/6004 "Run-II Dimuon Trigger Optimization and Efficiency Measurement"
- CDF/DOC/COMP_UPG/PUBLIC/5983 "The CDF Run II Data File Catalog"
- CDF/DOC/ONLINE/CDFR/5867 "How the ObjectMon GoodRun Decision is Made"
- CMS IN1999/011 "Altering the Current HF Design"
- CMS IN1996/003 "Optimization of the VFCAL Design"
- CMS/TN96-120 "Impact of HF-HV Transition Region on Forward Calorimetry performance"
- CMS/TN96-106 "Study of Degradation of the Quartz VFCAL Response Due to Fiber Radiation Damage"
- CMS/TN95-098 "Detailed Monte Carlo program for Quartz Very Forward Calorimeter for CMS detector"

List of References for Dr. Dmitry Litvintsev

- **Dr. Robert M. Harris**
  Fermilab, P.O. Box 500, M.S. 234
  Batavia, IL, 60510
  Work phone: (630)-840-4932
  Work fax: (630)-840-2968
  e-mail: rharris@fnal.gov

- **Dr. Christopher Paus**
  Department of Physics, Building 24-509, MIT,
  77, Massachusetts Ave., Cambridge, MA02139-4307
  phone: (617)-258-0314
  fax: (617)-253-1755

  Fermilab, P.O. Box 500, M.S. 318
  Batavia, IL, 60510
  Work phone: (630)-840-4993
  Work fax: (630)-840-2968
  e-mail: paus@fnal.gov

- **Professor James Russ**
  Fermilab , P.O. Box 500, M.S. 318,
  Batavia, IL, 60510
  Work phone: (630)-840-4319
  Work fax: (630)-840-2968
  e-mail: russ@fnal.gov

- **Professor Marjorie D. Shapiro**
  Fermilab, P.O. Box 500, M.S. 318,
  Batavia, IL, 60510
  Work phone: (630)-840-8697 (FNAL)
  Work phone: (510) 486-468 (LBL)
  Work fax: (630)-840-2968
  e-mail: mdshapiro@lbl.gov

Publications with major contribution from D. Litvintsev

[1] D. Acosta *et al.* [CDF Collaboration], "Measurement of the J/ψ meson and b-hadron production cross sections in p anti-p collisions at $\sqrt{s}$ = 1960-GeV," arXiv:hep-ex/0412071.

[2] "Pentaquark Searches at CDF" Pub. Proceedings 6th International Conference on Hyperons, Charm and Beauty Hadrons (BEACH2004), Chicago, IL, June 28-July 3, 2004. FERMILAB-CONF-05-205-E

[3] "The CDF Run II Data File Catalog", Edited by H.S. Chen, Beijing, 3-7 Sept 2001, Science Press, Beijing/New York.

[4] D. O. Litvintsev, "The CDF data handling system," eConf **C0303241**, THKT005 (2003) [arXiv:physics/0306060].

[5] N. Akchurin *et al.*, "Test Beam Results Of Cms Quartz Fibre Calorimeter Prototype And Simulation Of Response To High Energy Hadron Jets," Nucl. Instrum. Meth. A **409**, 593 (1998).

[6] H. Albrecht *et al.* [ARGUS Collaboration], "Evidence for Lambda/c(2593)+ production," Phys. Lett. B **402**, 207 (1997).

[7] D.Litvintsev "Recent Results in Heavy Hadron Spectroscopy", IVth International Workshop on Progress in Heavy Quark Physics, Rostock, Germany, September 20-22, 1997 Published in Rostock 1997, Progress in heavy quark physics, 226-236

[8] N. Akchurin *et al.*, "Beam Test Results From A Fine-Sampling Quartz Fiber Calorimeter For Electron, Photon And Hadron Detection," Nucl. Instrum. Meth. A **399**, 202 (1997).

[9] H. Albrecht *et al.* [ARGUS Collaboration],"Physics with ARGUS," Phys. Rept. **276**, 223 (1996).

[10] V. Gavrilov *et al.*, "CMS quartz fiber calorimetry," `http://www.slac.stanford.edu/spires/find/hep/www?irn=4967160` SPIRES

entry, *Prepared for 6th International Conference on Calorimetry in High-energy Physics (ICCHEP 96), Rome, Italy, 8-14 Jun 1996*

[11] G. Anzivino *et al.*, "Angular Dependence Of Quartz Fiber Calorimeter Response," Nucl. Instrum. Meth. A **360**, 237 (1995).

[12] H. Albrecht *et al.* [ARGUS Collaboration], "A Search for lepton flavor violating decays $\tau \to e\alpha$, $\tau \to \mu\alpha$"m Z. Phys. C **68**, 25 (1995).

[13] D. Litvintsev [ARGUS Collaboration], "Recent Argus Results On Charmed Hadron Production," Phys. Atom. Nucl. **57**, 1542 (1994) [Yad. Fiz. **57**, 1616 (1994)].

[14] H. Albrecht *et al.* [ARGUS Collaboration], "Observation of a new charmed baryon," Phys. Lett. B **317**, 227 (1993).

Other publications by D. Litvintsev

[1] D. Acosta *et al.* [CDF II Collaboration], "Observation of the narrow state X(3872) → J/psi pi+ pi- in anti-p p collisions at s**(1/2) = 1.96-TeV," arXiv:hep-ex/0312021.

[2] D. Acosta *et al.* [CDF Collaboration], "Measurement of the polar-angle distribution of leptons from W boson decay as a function of the W transverse momentum in p anti-p collisions at s**(1/2) = 1.8-TeV," arXiv:hep-ex/0311050.

[3] D. Acosta *et al.* [CDF Collaboration], "Inclusive double pomeron exchange at the Fermilab Tevatron anti-p p collider," arXiv:hep-ex/0311023.

[4] D. Acosta *et al.* [CDF Collaboration], "Measurement of the average time-integrated mixing probability of b-flavored hadrons produced at the Tevatron," Phys. Rev. D **69**, 012002 (2004) [arXiv:hep-ex/0309030].

[5] D. Acosta *et al.* [CDF Collaboration], "Search for the flavor-changing neutral current decay D0 → mu+ mu- in p anti-p collisions at s**(1/2) = 1.96-TeV," Phys. Rev. D **68**, 091101 (2003) [arXiv:hep-ex/0308059].

[6] D. Acosta *et al.* [CDF II Collaboration], "Measurement of the mass difference m(D/s+) - m(D+) at CDF II," Phys. Rev. D **68**, 072004 (2003) [arXiv:hep-ex/0310043].

[7] D. Acosta *et al.* [CDF Collaboration], "Measurement of prompt charm meson production cross sections in p anti-p collisions at s**(1/2) = 1.96-TeV," Phys. Rev. Lett. **91**, 241804 (2003) [arXiv:hep-ex/0307080].

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[9] D. Bonham *et al.*, "Adapting SAM for CDF," eConf **C0303241**, TUAT004 (2003) [arXiv:cs.dc/0306112].

[10] D. Acosta *et al.* [CDF Collaboration], "Search for pair production of scalar top quarks in R-parity violating decay modes in p anti-p collisions at s**(1/2) = 1.8-TeV," arXiv:hep-ex/0305010.

[11] D. Acosta *et al.* [CDF Collaboration], "Central pseudorapidity gaps in events with a leading antiproton at the Fermilab Tevatron anti-p p collider," Phys. Rev. Lett. **91**, 011802 (2003) [arXiv:hep-ex/0303011].

[12] D. Acosta *et al.* [CDF Collaboration], "Search for the supersymmetric partner of the top quark in dilepton events from p anti-p collisions at s**(1/2) = 1.8-TeV," Phys. Rev. Lett. **90**, 251801 (2003) [arXiv:hep-ex/0302009].

[13] D. Acosta *et al.* [CDF Collaboration], "Cross section for forward J/ psi production in pp collisions at s =1.8 TeV," Phys. Rev. D **66**, 092001 (2002).

[14] D. Acosta *et al.* [CDF Collaboration], "Search for long-lived charged massive particles in anti-p p collisions at s**1/2 = 1.8-TeV," Phys. Rev. Lett. **90**, 131801 (2003) [arXiv:hep-ex/0211064].

[15] D. Acosta *et al.* [CDF Collaboration], "Search for a W' boson decaying to a top and bottom quark pair in 1.8-TeV p anti-p collisions. ((B))," Phys. Rev. Lett. **90**, 081802 (2003) [arXiv:hep-ex/0209030].

[16] D. Acosta *et al.* [CDF Collaboration], "Search for radiative b-hadron decays in p anti-p collisions at s**(1/2) = 1.8-TeV. ((C))," Phys. Rev. D **66**, 112002 (2002) [arXiv:hep-ex/0208035].

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[18] D. Acosta *et al.* [CDF Collaboration], "Measurement of the ratio of b quark production cross sections in anti-p p collisions at s**(1/2) = 630-GeV and s**(1/2) = 1800-GeV," Phys. Rev. D **66**, 032002 (2002) [arXiv:hep-ex/0206019].

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[28] D. Acosta *et al.* [CDF Collaboration], "Search for the decay B/s → mu+ mu- Phi in p anti-p collisions at s**(1/2) = 1.8-TeV," Phys. Rev. D **65**, 111101 (2002).

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[32] D. Acosta *et al.* [CDF Collaboration], "Study of the heavy flavor content of jets produced in association with W bosons in p anti-p collisions at s**(1/2) = 1.8-TeV," Phys. Rev. D **65**, 052007 (2002) [arXiv:hep-ex/0109012].

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[51] M. Carena *et al.* [Higgs Working Group Collaboration], "Report of the Tevatron Higgs working group," arXiv:hep-ph/0010338.

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